

EPITAXIAL CRYSTAL

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Abstract

PURPOSE: To produce a crystal layer which is free from mutual diffusion and has a multilayered structure in excellent reproducibility by making the following As atomic layer an atomic layer contg. N atom wherein both a GaAs layer constituting epitaxial crystal of the multilayered structure and an AlGaAs layer are bonded.

CONSTITUTION: In an ultralattice layer consisting of epitaxial crystal of a multilayered structure wherein a GaAs layer 24 and an AlGaAs layer 22 are alternately superimposed, an As 34 layer in which the above-mentioned GaAs layer 24 and AlGaAs layer (Al composition X not equal to 0) 22 are bonded is made to an atomic layer contg. N atom 35. Thereby the turbulence of a structure based on mutual diffusion is prevented and the ultralattice layer can be formed at about 700 deg.C high temp. in excellent reproducibility and the heat-treatment at about 800 deg.C is enabled. The above-mentioned N atom layer is inserted and formed by introducing NH₃, N₂, N₂H₄, etc., in the process of epitaxial growth.